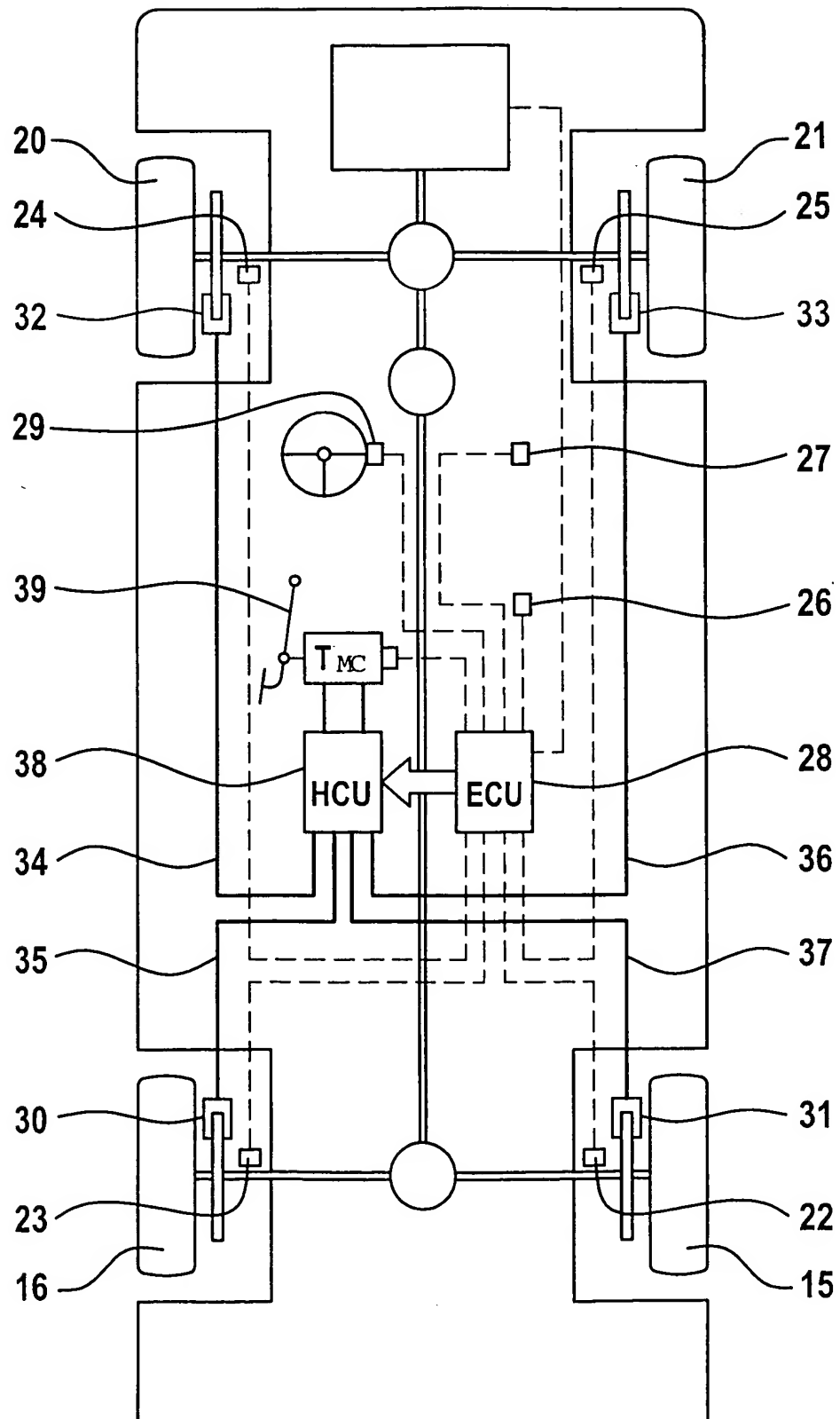


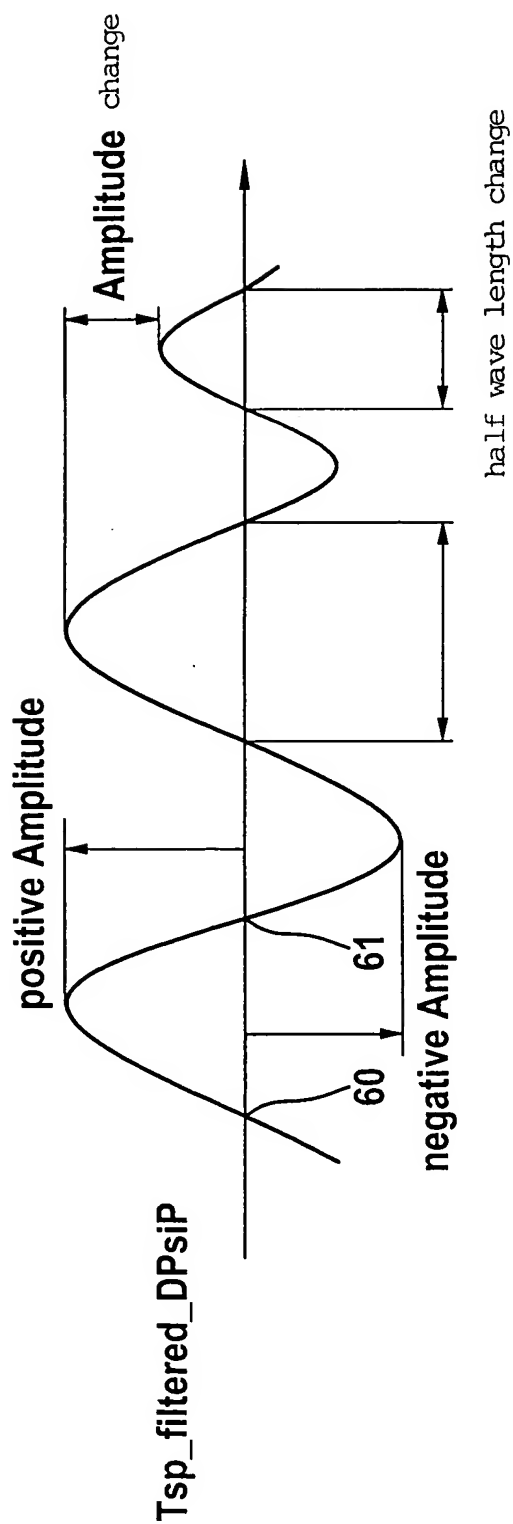
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Fig. 1



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## Analysis Tsp\_filtered\_DPsIP



**Fig. 2**

Each half wave is analysed:

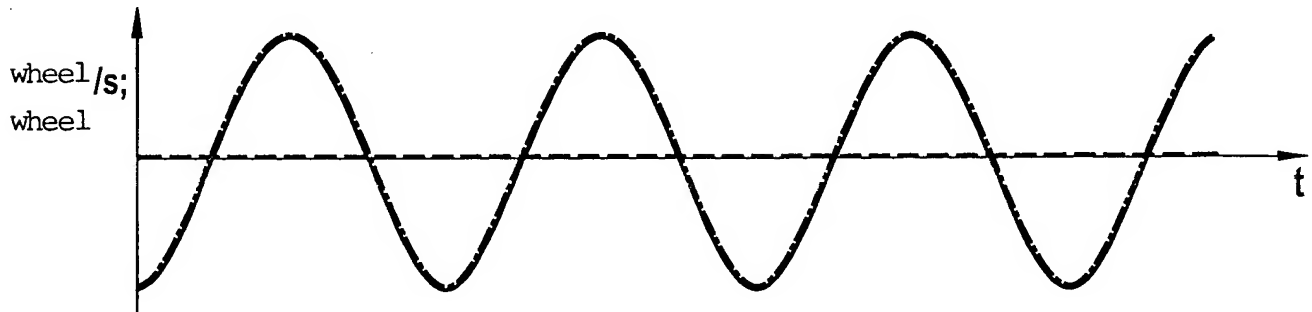
- **Amplitude** exceeds allowable threshold?
- **Amplitude** decreases too much?
- Is half wave length in the permitted range ? ( $\Rightarrow$  Frequency  $\sim 0.5$  to  $1.5$  Hz)
- Does half wave length change too much ?

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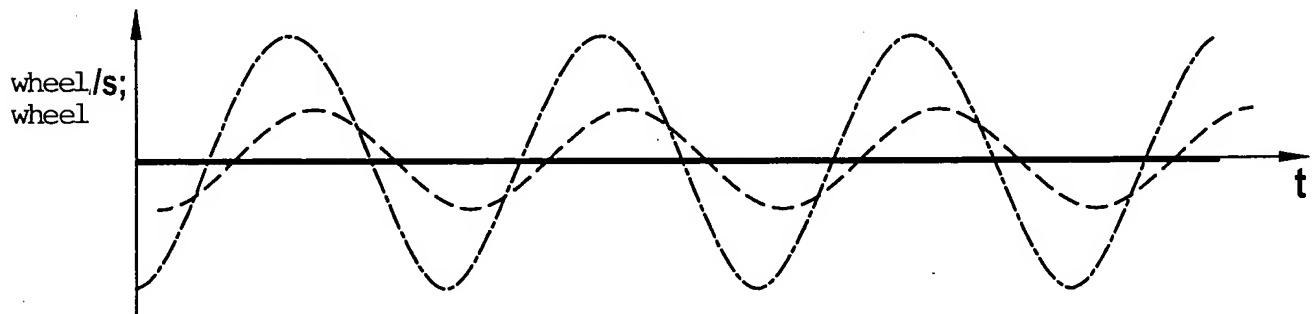
Fig. 3

- a) Snaking of car-trailer combination; Oscillation without corresponding steering angle variation

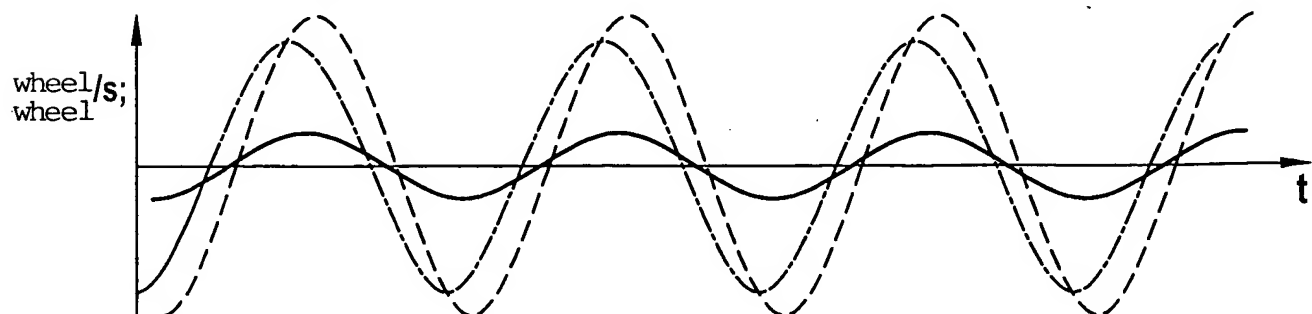
- - - yaw rate  
 - - - steering angle  
 — difference between measured yaw rate and model yaw rate



- b) Slalom maneuver; oscillation is produced by steering angle variation alone; difference equals zero because vehicle is able to follow the model



- c) Slalom maneuver (dynamic); oscillation is produced by steering angle variation alone; difference equals zero because vehicle is no longer able to follow the model



Filtered model yaw rate deviation

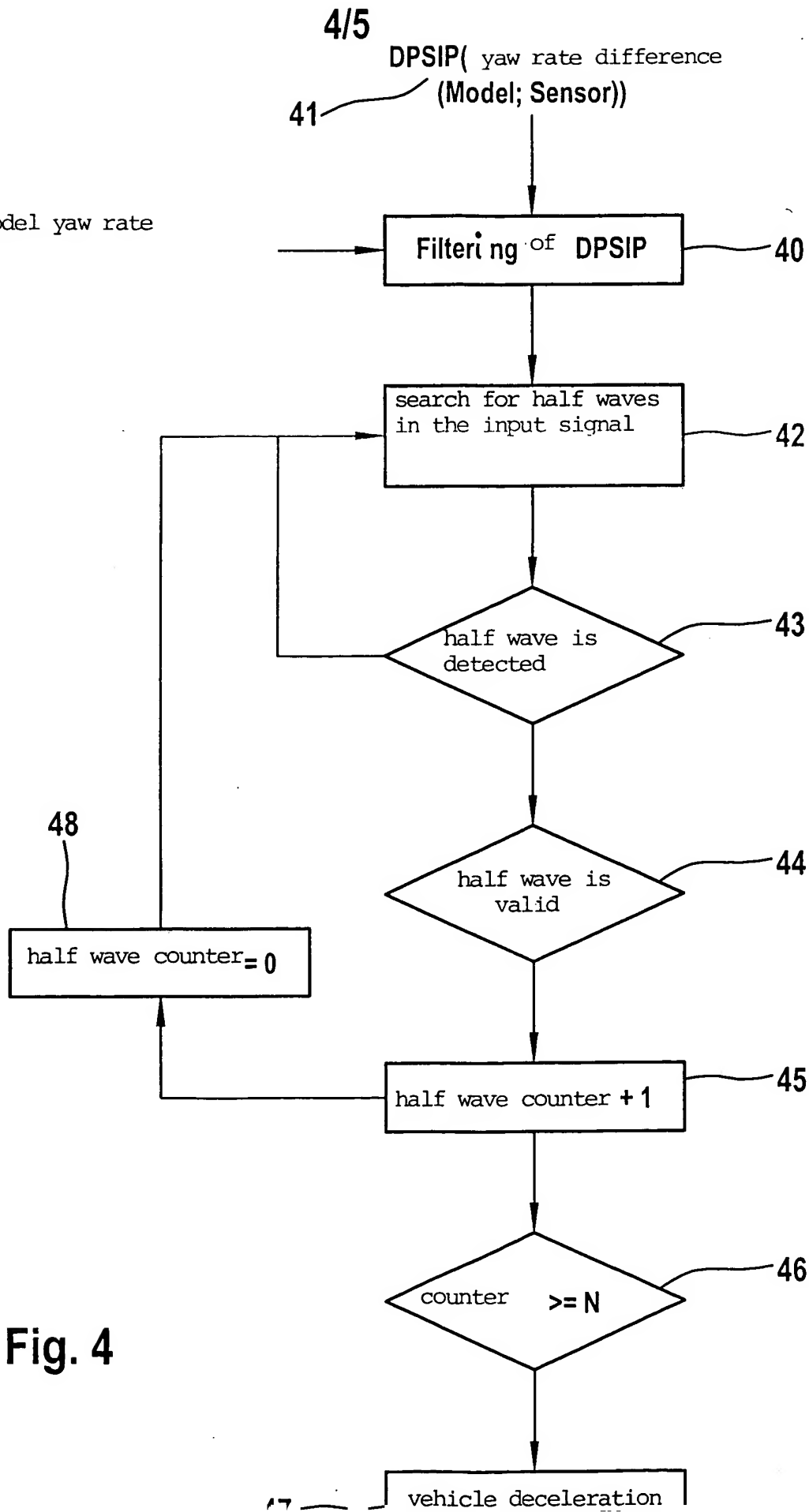
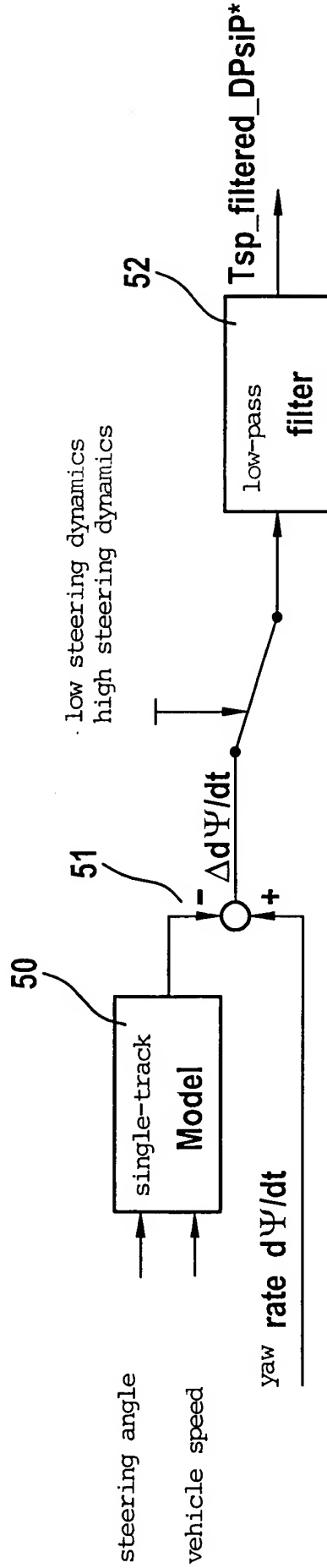


Fig. 4

# Calculation of Tsp\_filtered\_DPsiP



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• Deviation is calculated from the measured yaw rate and the model yaw rate.

• Spurious detection is prevented at high steering dynamics.

• Irrelevant frequency components (~1.5Hz) are filtered out.

**Tsp\_filtered\_DPsiP** is the main detection signal.

\*  $DPsiP: \Delta d\Psi/dt$

Fig. 5